REMARKS/ARGUMENTS

The claims are 4-7 and 9-21. Claim 1 has been amended to incorporate the subject matter of claims 3 and 8. Accordingly, claims 3 and 8 have been canceled, and claims 4, 5 and 7, and claim 9, which previously depended on claims 3 and 8, respectively, have been amended to depend on claim 21. Reconsideration is expressly requested.

Claims 10, 11 and 18-21 were rejected under 35 U.S.C. 102(b) as being anticipated by *Hokaku et al. JP 55-14150.* Claims 3-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Nishikawa et al. JP 11-058012* or *Mita et al. EP 0 774 317* discussed in the specification which the Examiner refers to as "Applicant Admitted Prior Art" in view of either *Hokaku et al.* or *Hsu et al. U.S. Patent Application Publication No. 2005-0006363.*

This rejection is respectfully traversed.

As set forth in claim 21 as amended, Applicant's invention provides a method for controlling welding process using a melting welding wire and a welding torch. In accordance with the method an electric arc is ignited and welding is subsequently conducted,

the welding being adjusted on the basis of several different welding parameters and controlled by at least one of a control device and a welding current source. At least one mechanical adjustment process is carried out during the welding to determine the position of the welding wire using the welding wire as a sensor.

As recited in claim 21 as amended, during the at least one mechanical adjustment process, the welding torch is maintained in position and the welding parameters are controlled in a manner that no or only little welding wire material melting is effected. Also, during the at least one mechanical adjustment process, contacting of the welding wire with a workpiece is effected by moving the welding wire towards the workpiece. After contacting of the welding wire with the workpiece, the welding wire is moved away from the workpiece to a fixedly pregiven or adjustable distance relative to the workpiece.

Hokaku et al. describes a method for controlling a welding process, whereby before the welding process the welding wire is moved with respect to the weld zone of the workpiece in order to detect the weld zone, as can be seen from FIGS. 5 and 7 of *Hokaku et al.* According to *Hokaku et al.*, the welding torch is moved until a contact of the welding wire or the tip of the welding

torch with the workpiece is detected. The so called "stick-out" length, that is the length of the welding wire projecting out of the contact nozzle of the welding torch, is constant.

Similarly, *Nishikawa et al.* describes a method and device for controlling the position of the welding wire in arc welding where the welding torch is moved until a contact of the welding wire with the workpiece is detected. The stick out length again is constant.

In *Mita et al.*, the position or distance of the end of the welding wire from the workpiece cannot be precisely determined because the most diverse influence is encountered in the welding process, and there is no disclosure or suggestion of maintaining the welding torch during at least one mechanical adjustment process in position and controlling the welding parameters in a manner such that no or only little welding wire melting material is effected.

Hsu et al. shows another method for determining the stick out length of the welding wire using a laser together with an optical receiver.

Contrary to the references cited by the Examiner, Applicant's method as set forth in claim 21, as amended, allows the determination of the position of the welding wire relative to the workpiece without the movement of the welding torch and during the welding process. According to Applicant's method as recited in claim 21, as amended, the position of the welding wire with respect to the workpiece can be determined without the necessity of moving the welding torch.

The mechanical adjustment process 41 according to Applicant's method as set forth in claim 21, as amended, is carried out during the welding process, namely, for instance, between two pulse current phases 35 during pulse welding as can be seen in FIGS. 2 to 5 of Applicant's disclosure. The mechanical adjustment process 41 uses the welding wire 13 as a sensor. The mechanical adjustment process 41 is performed in the base current phase 35, whereby it is ensured that no droplet 38 will form on the end of the welding wire 13 and, hence, no or only little melting of material, or material transfer, onto the workpiece 16 will occur. The mechanical adjustment process 41 is realized in a manner that the welding wire 13 is moved towards the workpiece 16 in the sense of arrow 29 until contacting the workpiece 16. At the contacting of the welding wire 13 with the workpiece 16, a deliberately controlled short circuit is thus

formed, which is recognized by the control device 4 with the elimination of the short circuit during the mechanical adjustment process 41 being suppressed by the control device 4 by a current increase.

The control device 4 detects the exact position of the end of the welding wire 13 relative to the workpiece 16, which is zero at a short circuit. From the starting position of the welding wire 13 at a short circuit the welding wire 13 is moved away from the workpiece 16 as far as to a given distance 32, which can be effected in that the rearward movement is effected to a detection of the actual value of the welding wire 13 using, for instance, an incremental sensor, so that the end of the welding wire 13 is conveyed to a particular distance 32 by a set/actual value comparison.

It is, of course, also possible to reach a predetermined position or predetermined distance 32 of a welding wire 13 by a simple time default for the rearward movement, because always the same position will be reached again on account of the defined conveying speed and time default. In addition, it is of course also possible to use the position of the end of the welding wire 13 or the course of the rearward movement or the set distance

between the workpiece 16 and the end of the welding wire 13, as in accordance with various other methods.

Applicant's claim 21, as amended, additionally recites that during the at least one mechanical adjustment process, contacting of the welding wire with a workpiece is effected by moving the welding wire towards the workpiece, and after contacting of the welding wire with the workpiece, the welding wire is moved away from the workpiece to a fixedly pregiven or adjustable distance relative to the workpiece. It is respectfully submitted that these features are nowhere disclosed by any of the cited references.

Accordingly, it is respectfully submitted that claim 21, as amended, together with claims 4-7 and 9-20, which depend directly or indirectly thereon, are patentable over the cited references.

In summary, claims 3 and 8 have been canceled, and claims 4, 5, 7, 9 and 21 have been amended. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,

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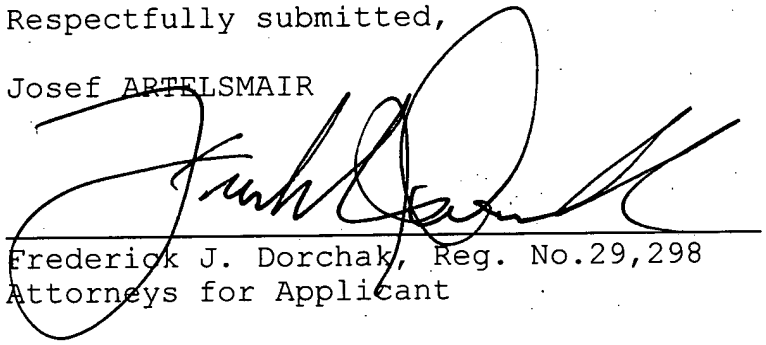

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